BHAVANA CK

1BM20CS403

CSE-4A

PROGRAM 5: AIRLINE FLIGHT DATABASE

Consider the following database that keeps track of airline flight information:

FLIGHTS(flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time, price: integer)

AIRCRAFT(aid: integer, aname: string, cruisingrange: integer)

CERTIFIED(eid: integer, aid: integer)

EMPLOYEES(eid: integer, ename: string, salary: integer)

Note that the Employees relation describes pilots and other kinds of employees as well; Every pilot is certified for some aircraft, and only pilots are certified to fly.

Write each of the following queries in SQL.

i. Find the names of aircraft such that all pilots certified to operate them have salaries more than Rs.80,000.

ii. For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruisingrange of the aircraft for which she or he is certified.

iii. Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Frankfurt.

iv. For all aircraft with cruisingrange over 1000 Kms, find the name of the aircraft and the average salary of all pilots certified for this aircraft.

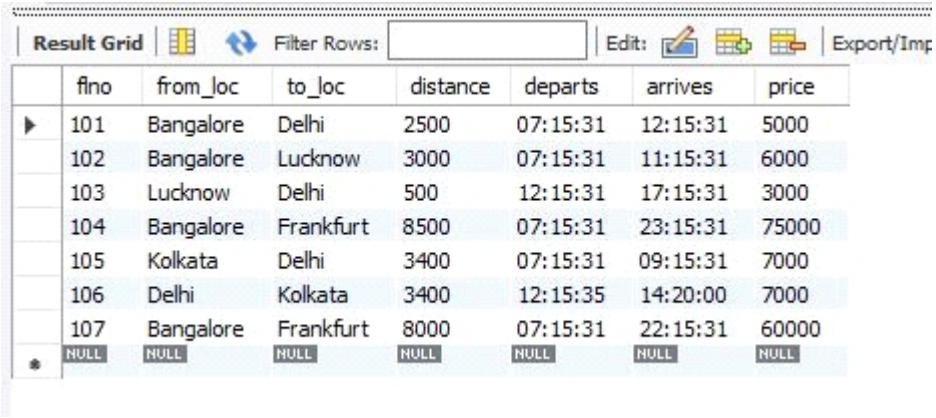
v. Find the names of pilots certified for some Boeing aircraft.

vi. Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi.

vii. A customer wants to travel from Madison to New York with no more than two changes of flight. List the choice of departure times from Madison if the customer wants to arrive in New York by 6 p.m.

```
create database airlines;

use airlines;


create table flights(

flno int not null,

from_loc varchar(20) not null,

to_loc varchar(20) not null,

distance int not null,

departs time not null,

arrives time not null,

price int not null,

primary key(flno)

);


create table aircraft(

aid int not null,

aname varchar(20) not null,

cruisingrange int not null,

primary key(aid)
```

```
);

create table employees(
eid int not null,
ename varchar(20) not null,
salary int not null,
primary key(eid)
);

create table certified(
eid int not null,
aid int not null,
primary key(eid,aid),
foreign key(eid)references employees(eid),
foreign key(aid)references aircraft(aid)
);

insert into flights
  values(101,"Bangalore","Delhi",2500,"07:15:31","12:15:31",5000),
(102,"Bangalore","Lucknow",3000,"07:15:31","11:15:31",6000),
(103,"Lucknow","Delhi",500,"12:15:31","17:15:31",3000),
(107,"Bangalore","Frankfurt",8000,"07:15:31","22:15:31",60000),
(104,"Bangalore","Frankfurt",8500,"07:15:31","23:15:31",75000),
(105,"Kolkata","Delhi",3400,"07:15:31","09:15:31",7000),
(106,"Delhi","Kolkata",3400,"12:15:35","14:20:00",7000);
```



Result Grid | Filter Rows: | Edit: | Export/Imp

fino	from_loc	to_loc	distance	departs	arrives	price
101	Bangalore	Delhi	2500	07:15:31	12:15:31	5000
102	Bangalore	Lucknow	3000	07:15:31	11:15:31	6000
103	Lucknow	Delhi	500	12:15:31	17:15:31	3000
104	Bangalore	Frankfurt	8500	07:15:31	23:15:31	75000
105	Kolkata	Delhi	3400	07:15:31	09:15:31	7000
106	Delhi	Kolkata	3400	12:15:35	14:20:00	7000
107	Bangalore	Frankfurt	8000	07:15:31	22:15:31	60000
NULL	NULL	NULL	NULL	NULL	NULL	NULL

insert into aircraft

values (101,"747",3000),

(102,"Boeing",900),

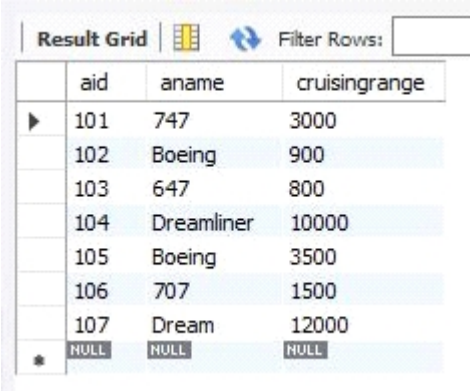
(103,"647",800),

(104,"Dreamliner",10000),

(105,"Boeing",3500),

(106,"707",1500),

(107,"Dream",12000);



Result Grid | Filter Rows:

aid	aname	cruisingrange
101	747	3000
102	Boeing	900
103	647	800
104	Dreamliner	10000
105	Boeing	3500
106	707	1500
107	Dream	12000
NULL	NULL	NULL

insert into employees

values(701,'A',50000),

(702,'B',100000),

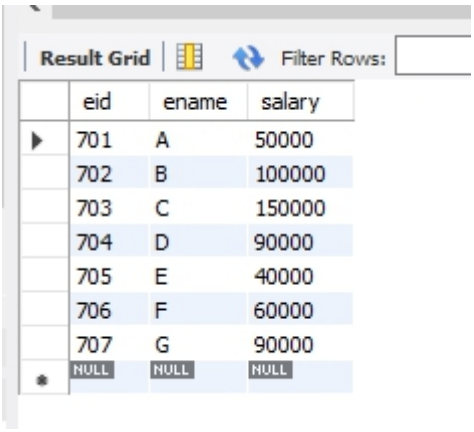
(703,'C',150000),

(704,'D',90000),

(705,'E',40000),

(706,'F',60000),

(707,'G',90000);



eid	ename	salary
701	A	50000
702	B	100000
703	C	150000
704	D	90000
705	E	40000
706	F	60000
707	G	90000
NULL	NULL	NULL

insert into certified

values(701,101),(701,102),

(701,106),(701,105),

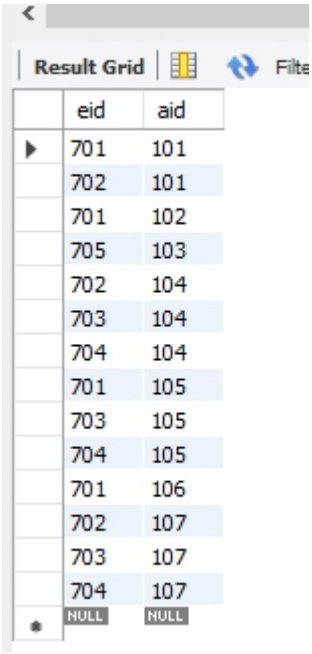
(702,104),(703,104),

(704,104),(702,107),

(703,107),(704,107),

(702,101),(703,105),

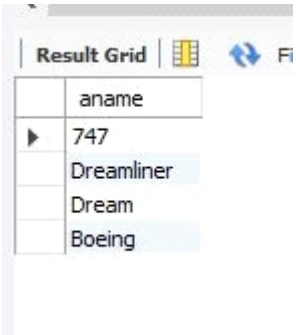
(704,105),(705,103);



eid	aid
701	101
702	101
701	102
705	103
702	104
703	104
704	104
701	105
703	105
704	105
701	106
702	107
703	107
704	107
NULL	NULL

----- Find the names of aircraft such that all pilots certified to operate them have salaries more than Rs.80,000.

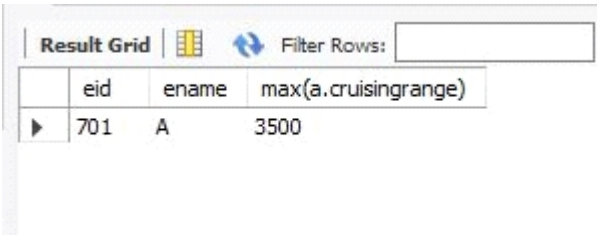
```
select distinct a.aname from aircraft a,employees e,certified c

where    a.aid =    c.aid and e.eid = c.eid and e.salary>80000;
```



aname
747
Dreamliner
Dream
Boeing

----- For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruisingrange of the aircraft for which she or he is certified.

```
select e.eid ,e.ename,max(a.cruisingrange)from employees e,certified c,aircraft a

where e.eid = c.eid and a.aid = c.aid group by e.ename having count(c.aid)>3;
```

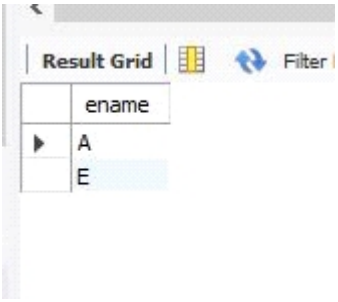


Result Grid | Filter Rows:

eid	ename	max(a.cruisingrange)
701	A	3500

----- Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Frankfurt.

```
select e.ename from employees e

where salary<(select min(price) from flights

where from_loc = "Bangalore" and to_loc = "Frankfurt");
```

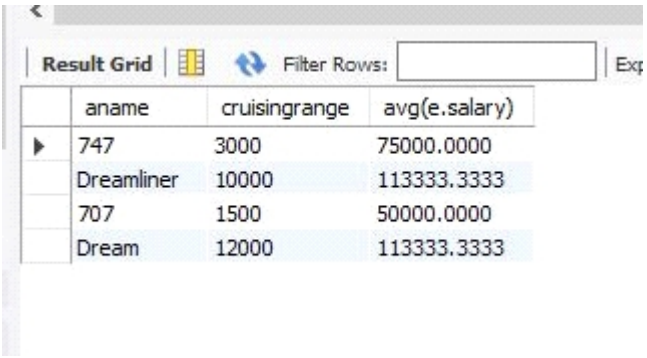


Result Grid | Filter

ename
A
E

----- For all aircraft with cruisingrange over 1000 Kms, find the name of the aircraft and the average salary of all pilots certified for this aircraft.

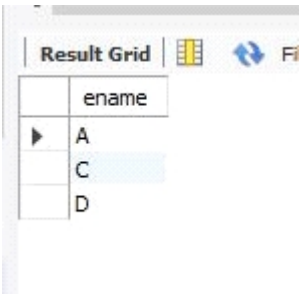
```
select a.aname,a.cruisingrange,avg(e.salary)

from aircraft a,employees e,certified c

where c.eid = e.eid and c.aid = a.aid

group by a.aname having a.cruisingrange>1000;
```



aname	cruisingrange	avg(e.salary)
747	3000	75000.0000
Dreamliner	10000	113333.3333
707	1500	50000.0000
Dream	12000	113333.3333

----- Find the names of pilots certified for some Boeing aircraft.

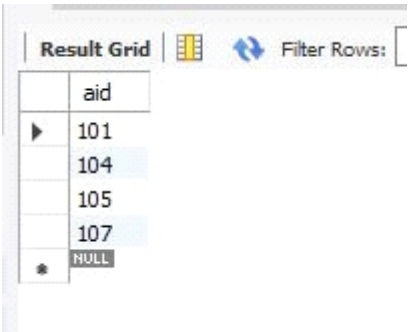
```
select distinct e.ename from employees e,certified c,aircraft a
where e.eid = c.eid and a.aid = c.aid and aname like "Boeing";
```



ename
A
C
D

----- Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi.

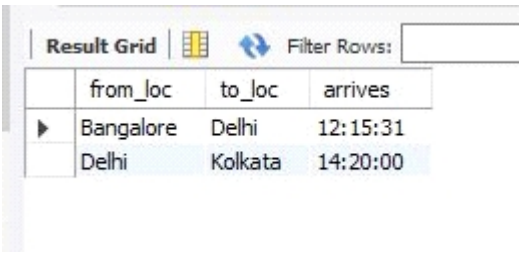
```
select a.aid from aircraft a
where a.cruisingrange>=(select distance from flights
where from_loc="Bangalore" and to_loc="Delhi");
```



aid
101
104
105
107
NULL

----- A customer wants to travel from Madison to New York with no more than two changes of flight. List the choice of departure times from Madison if the customer wants to arrive in New York by 6 p.m.

```
select f.from_loc,f.to_loc,f.arrives from flights f

where (f.from_loc ="Bangalore" and f.to_loc =(select from_loc from flights

where to_loc = "Kolkata")) or f.to_loc="Kolkata";
```



Result Grid | Filter Rows:

from_loc	to_loc	arrives
Bangalore	Delhi	12:15:31
Delhi	Kolkata	14:20:00